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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 836,857	04 17 2001	Seiichi Iwanatsu	12179-P098US	5893

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EXAMINER

VANOREL, DAVID A

ART UNIT PAPER NUMBER

2881

DATE MAILED: 01 29 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/836,857

Applicant(s)

IWAMATSU, SEIICHI

Examiner

David A Vanore

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2001 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Baylor et al.

Baylor et al. teaches an electron beam lithography apparatus comprising a first substrate (510)) having electron field emitters (431,432,433,434) positioned there above with an electric grid circuit (440) to control the emission of electrons from the desired emitters. Baylor et al. further teaches a second substrate (350) having a resist coating thereon which electron beams are impinged on to form a desired pattern as recited in claim 1. See Baylor et al. (Col. 3 Line 44 – Col. 4 Line 25.)

Regarding claims 2 and 3, Baylor et al. teaches the use of magnetic and electrostatic field lenses (463, 467, 470) between the first and second substrate to focus the electron beams.

Regarding claim 4, Baylor et al. further teaches a conductive layer between the first substrate and the field emitters. The conductive connections (530) which control electron emission and the logic circuit layer (520) embedded beneath the emitters comprise this conductive layer.

Regarding claims 6-9, Baylor et al. teaches a conductive material deposited on the first substrate between field emitters (441, 442, 443, 444), which is coplanar with the

emitting face of the emitter, covers the edges of the emitter, and is positioned such that the emitter is recessed below the surface of the conductive material.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baylor et al.

Baylor et al. teaches all limitations as applied above but fails to teach a wafer having a conductive layer implanted therein between a substrate layer and a resist layer.

Implanting a conductive layer between successive layers of resist or substrate material is well known in the art of circuit manufacture and is typically required for the production of such a device as that of Baylor et al.

Chan et al., Borel et al., and Huang et al. all teach field emission devices which manufacture or are manufactured with a process requiring that multiple layers of conductive material are interwoven with layers of substrate material and resist. For example, Huang et al. teaches an etching process for forming a field emission means using a plurality of dielectric, conductive, and resist layers (Col. 3 Line 16 through Col. 4 Line 34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to supply a substrate having a conductive layer interposed between a substrate layer and a resist layer because the layering of conductors, dielectrics, and resist on a substrate in a lithographic manufacturing process is taught by Huang et al., Borel et al., and Chan et al., and relate directly to the manufacture of large arrays of field emission means as taught by Baylor et al.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Vanore whose telephone number is 703-306-0246. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on 703-308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

dav  
January 18, 2003

*[Handwritten signature]*  
JOHN LEE  
SUPERVISOR  
703-308-4116  
703-308-0956